FIG. 1

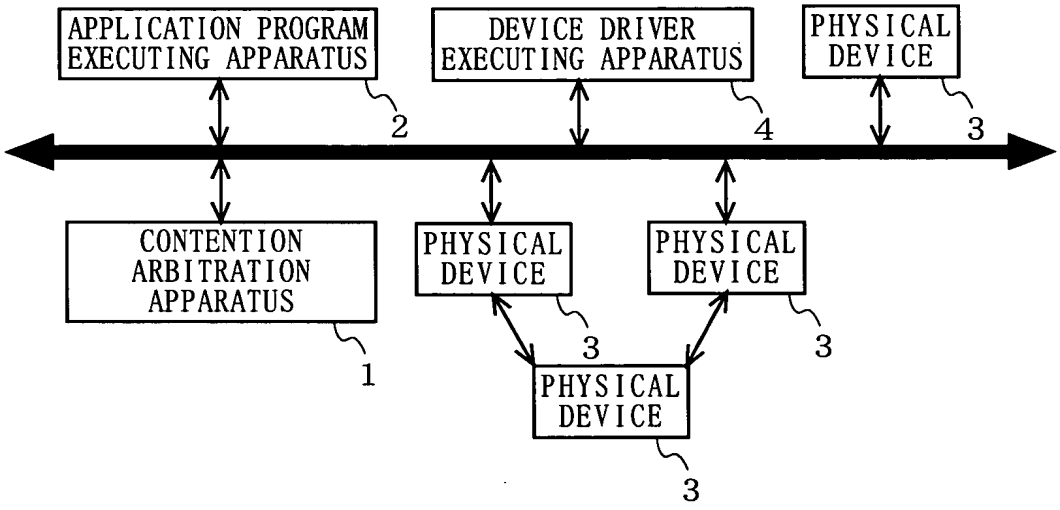

APPLICATION PROGRAM EXECUTING APPARATUS
2
DEVICE DRIVER EXECUTING APPARATUS
4
PHYSICAL DEVICE
3
CONTENTION ARBITRATION APPARATUS
1
PHYSICAL DEVICE
3
PHYSICAL DEVICE
3
PHYSICAL DEVICE
3

FIG. 2

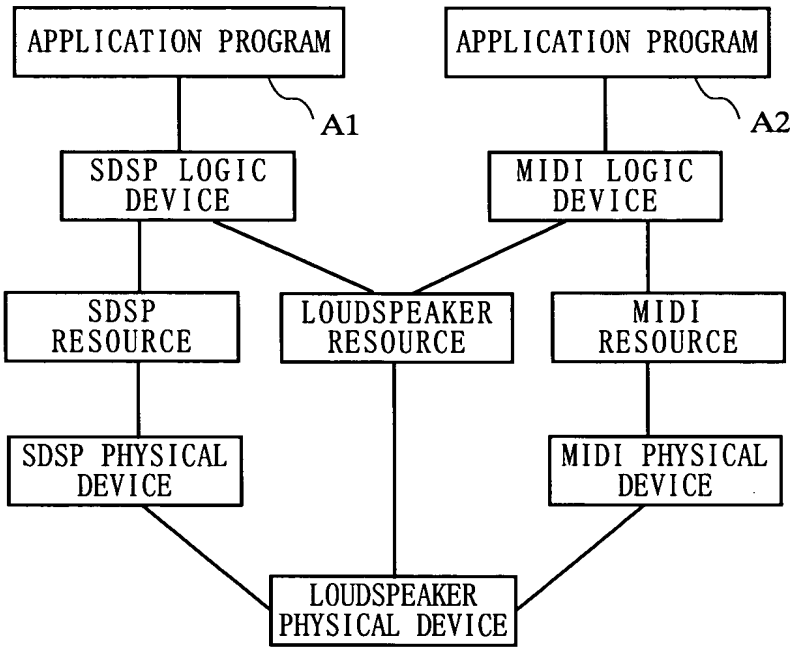

APPLICATION PROGRAM
APPLICATION PROGRAM
A1
A2
SDSP LOGIC DEVICE
MIDI LOGIC DEVICE
SDSP RESOURCE
LOUDSPEAKER RESOURCE
MIDI RESOURCE
SDSP PHYSICAL DEVICE
MIDI PHYSICAL DEVICE
LOUDSPEAKER PHYSICAL DEVICE

FIG. 3

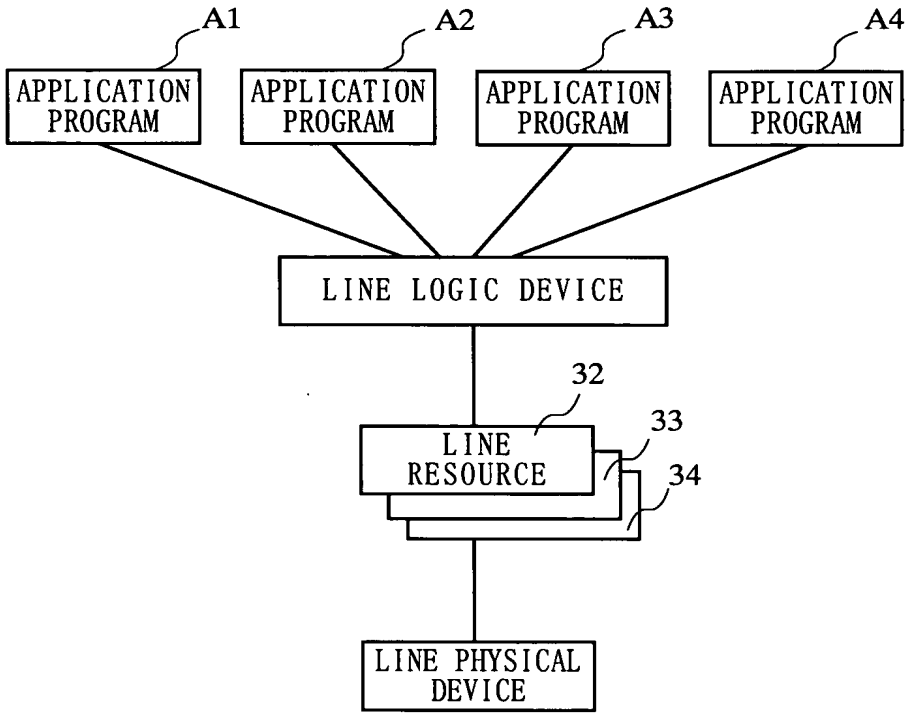

A1
A2
A3
A4
APPLICATION PROGRAM
APPLICATION PROGRAM
APPLICATION PROGRAM
APPLICATION PROGRAM
LINE LOGIC DEVICE
32
33
34
LINE RESOURCE
LINE PHYSICAL DEVICE

FIG. 4

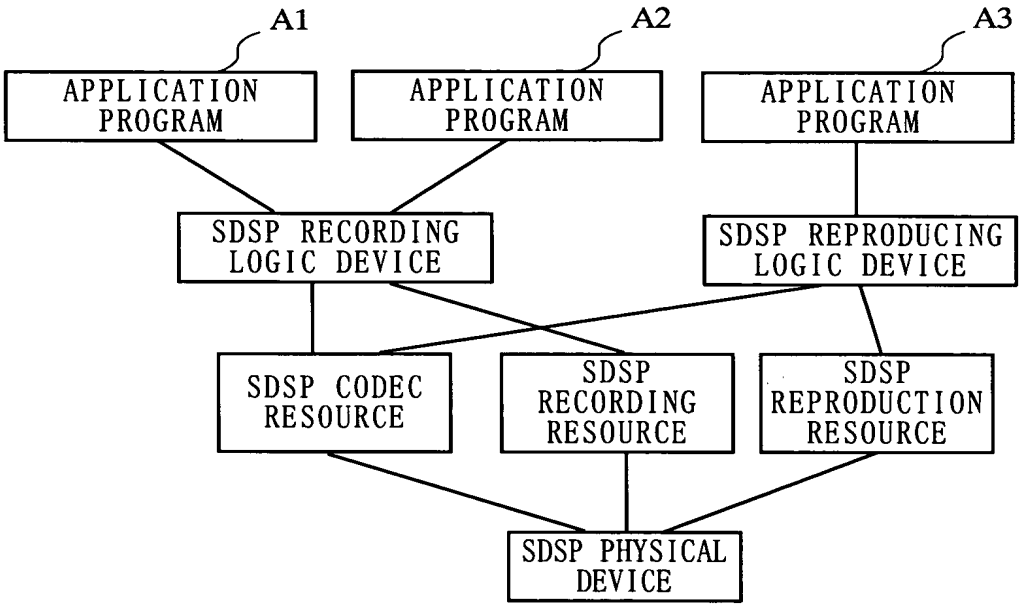

A1
A2
A3
APPLICATION PROGRAM
APPLICATION PROGRAM
APPLICATION PROGRAM
SDSP RECORDING LOGIC DEVICE
SDSP REPRODUCING LOGIC DEVICE
SDSP CODEC RESOURCE
SDSP RECORDING RESOURCE
SDSP REPRODUCTION RESOURCE
SDSP PHYSICAL DEVICE

FIG. 5

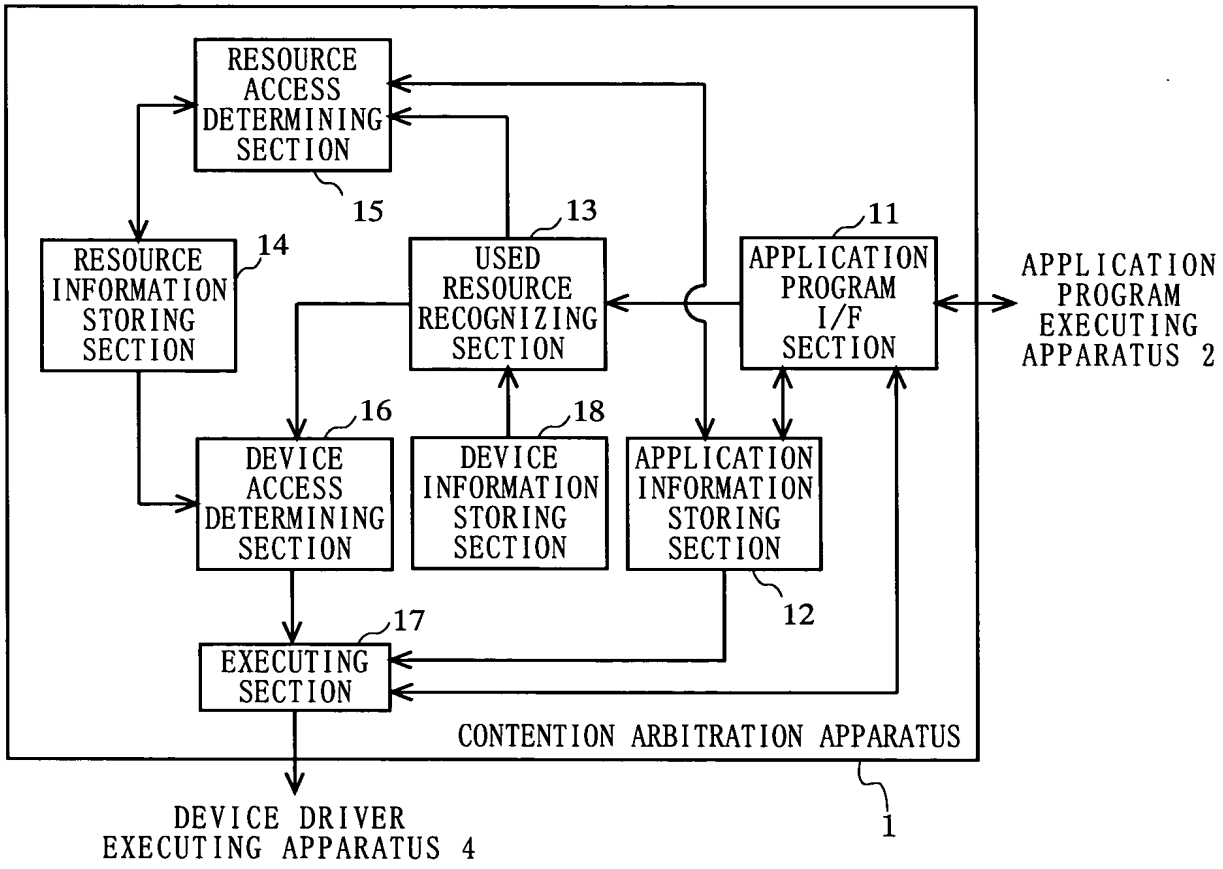

RESOURCE ACCESS DETERMINING SECTION
15
13
11
RESOURCE INFORMATION STORING SECTION
14
USED RESOURCE RECOGNIZING SECTION
APPLICATION PROGRAM I/F SECTION
APPLICATION PROGRAM EXECUTING APPARATUS 2
16
18
DEVICE ACCESS DETERMINING SECTION
DEVICE INFORMATION STORING SECTION
APPLICATION INFORMATION STORING SECTION
12
17
EXECUTING SECTION
CONTENTION ARBITRATION APPARATUS
1
DEVICE DRIVER EXECUTING APPARATUS 4

FIG. 6

APPLICATION ID	PRIORITY	ACCESS TARGET LOGIC DEVICE NAME	ACCESSIBILITY INFORMATION
1	1	SDSP LOGIC DEVICE	ALLOWED
2	2	MIDI LOGIC DEVICE	NOT ALLOWED
5	4	LINE LOGIC DEVICE	ALLOWED
3	3	SDSP RECORDING LOGIC DEVICE	ALLOWED
4	5	SDSP REPRODUCING LOGIC DEVICE	NOT ALLOWED
...	...	...	...

FIG. 7

LOGIC DEVICE NAME	RESOURCE NAME
SDSP LOGIC DEVICE	SDSP RESOURCE
	LOUDSPEAKER RESOURCE
MIDI LOGIC DEVICE	MIDI RESOURCE
	LOUDSPEAKER RESOURCE
LINE LOGIC DEVICE	LINE RESOURCE
SDSP RECORDING LOGIC DEVICE	SDSP RECORDING RESOURCE
	SDSP CODEC RESOURCE
SDSP REPRODUCING LOGIC DEVICE	SDSP REPRODUCTION RESOURCE
	SDSP CODEC RESOURCE
...	...

FIG. 8

RESOURCE NAME	APPLICATION ID OF ACCESS RIGHT HOLDER
SDSP RESOURCE	1
LOUDSPEAKER RESOURCE	1
MIDI RESOURCE	NULL
LINE RESOURCE	5
LINE RESOURCE	NULL
LINE RESOURCE	NULL
SDSP CODEC RESOURCE	3
SDSP RECORDING RESOURCE	3
SDSP REPRODUCTION RESOURCE	NULL
...	...

FIG. 9

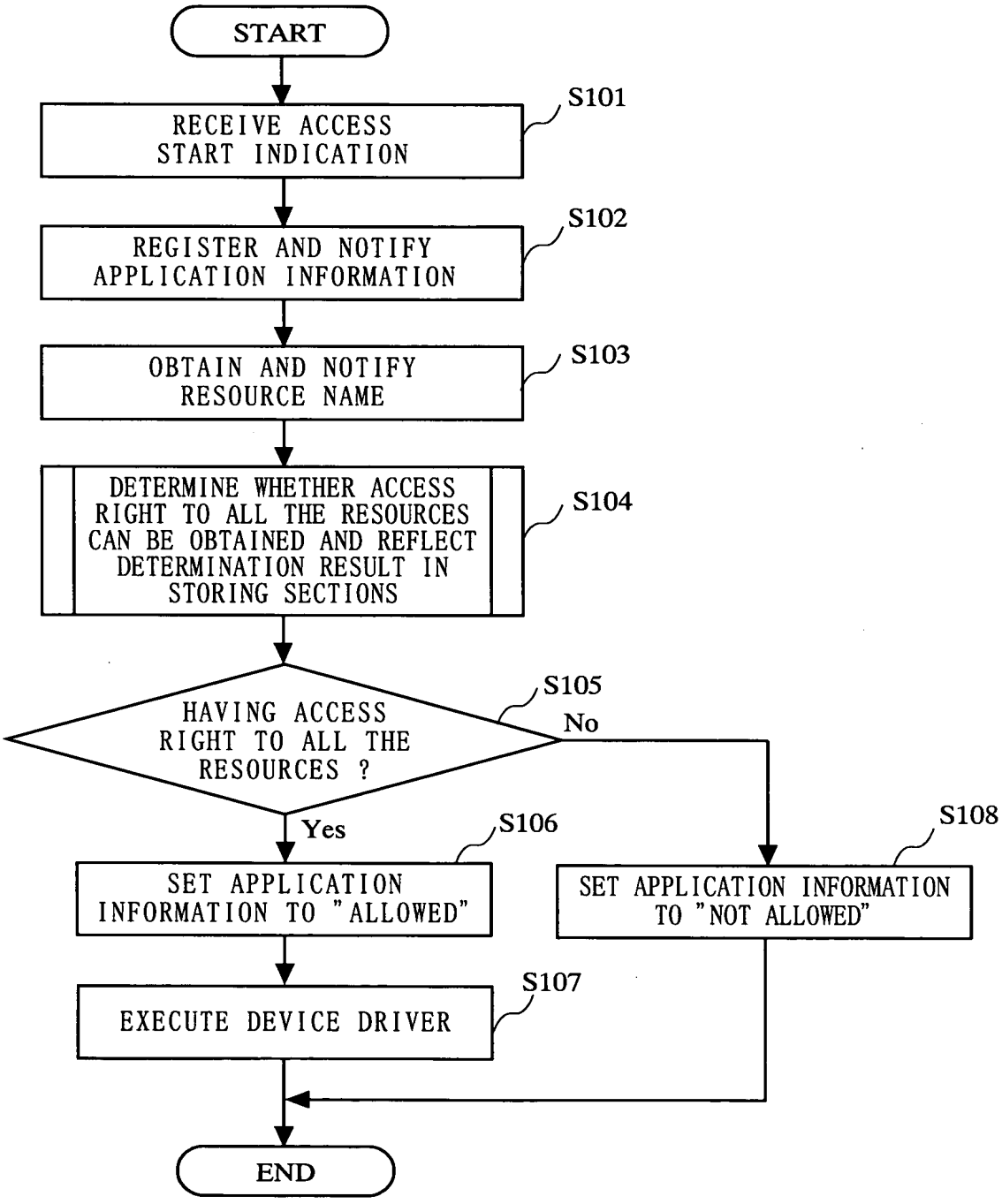

START
RECEIVE ACCESS START INDICATION
S101
REGISTER AND NOTIFY APPLICATION INFORMATION
S102
OBTAIN AND NOTIFY RESOURCE NAME
S103
DETERMINE WHETHER ACCESS RIGHT TO ALL THE RESOURCES CAN BE OBTAINED AND REFLECT DETERMINATION RESULT IN STORING SECTIONS
S104
HAVING ACCESS RIGHT TO ALL THE RESOURCES ?
S105
No
Yes
SET APPLICATION INFORMATION TO "ALLOWED"
S106
SET APPLICATION INFORMATION TO "NOT ALLOWED"
S108
EXECUTE DEVICE DRIVER
S107
END

FIG. 10

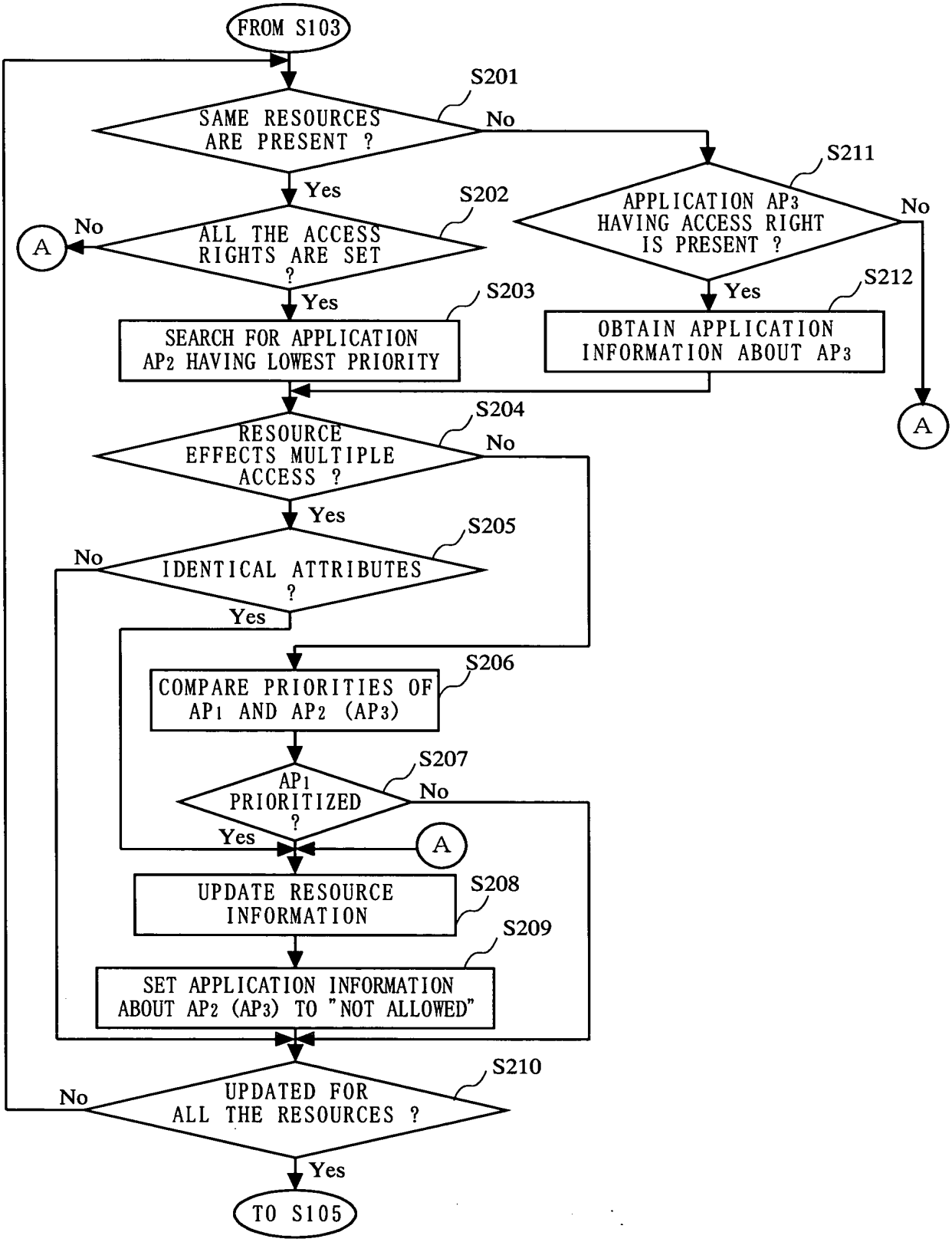

FROM S103
S201
SAME RESOURCES ARE PRESENT ?
No
Yes
S202
ALL THE ACCESS RIGHTS ARE SET ?
No
A
Yes
S203
SEARCH FOR APPLICATION AP2 HAVING LOWEST PRIORITY
S211
APPLICATION AP3 HAVING ACCESS RIGHT IS PRESENT ?
No
Yes
S212
OBTAIN APPLICATION INFORMATION ABOUT AP3
A
S204
RESOURCE EFFECTS MULTIPLE ACCESS ?
No
Yes
S205
IDENTICAL ATTRIBUTES ?
No
Yes
S206
COMPARE PRIORITIES OF AP1 AND AP2 (AP3)
S207
AP1 PRIORITIZED ?
No
Yes
A
S208
UPDATE RESOURCE INFORMATION
S209
SET APPLICATION INFORMATION ABOUT AP2 (AP3) TO "NOT ALLOWED"
S210
UPDATED FOR ALL THE RESOURCES ?
No
Yes
TO S105

FIG. 11

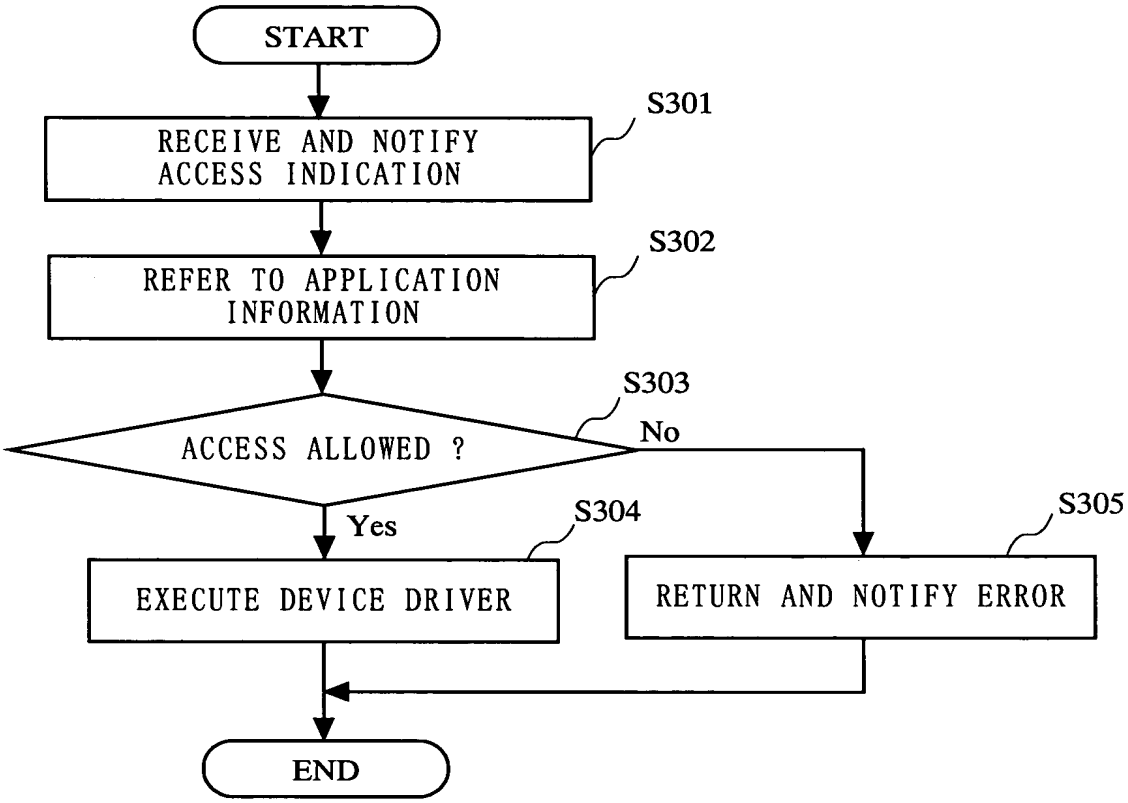

START
RECEIVE AND NOTIFY ACCESS INDICATION
S301
REFER TO APPLICATION INFORMATION
S302
ACCESS ALLOWED ?
S303
No
Yes
EXECUTE DEVICE DRIVER
S304
RETURN AND NOTIFY ERROR
S305
END

FIG. 12

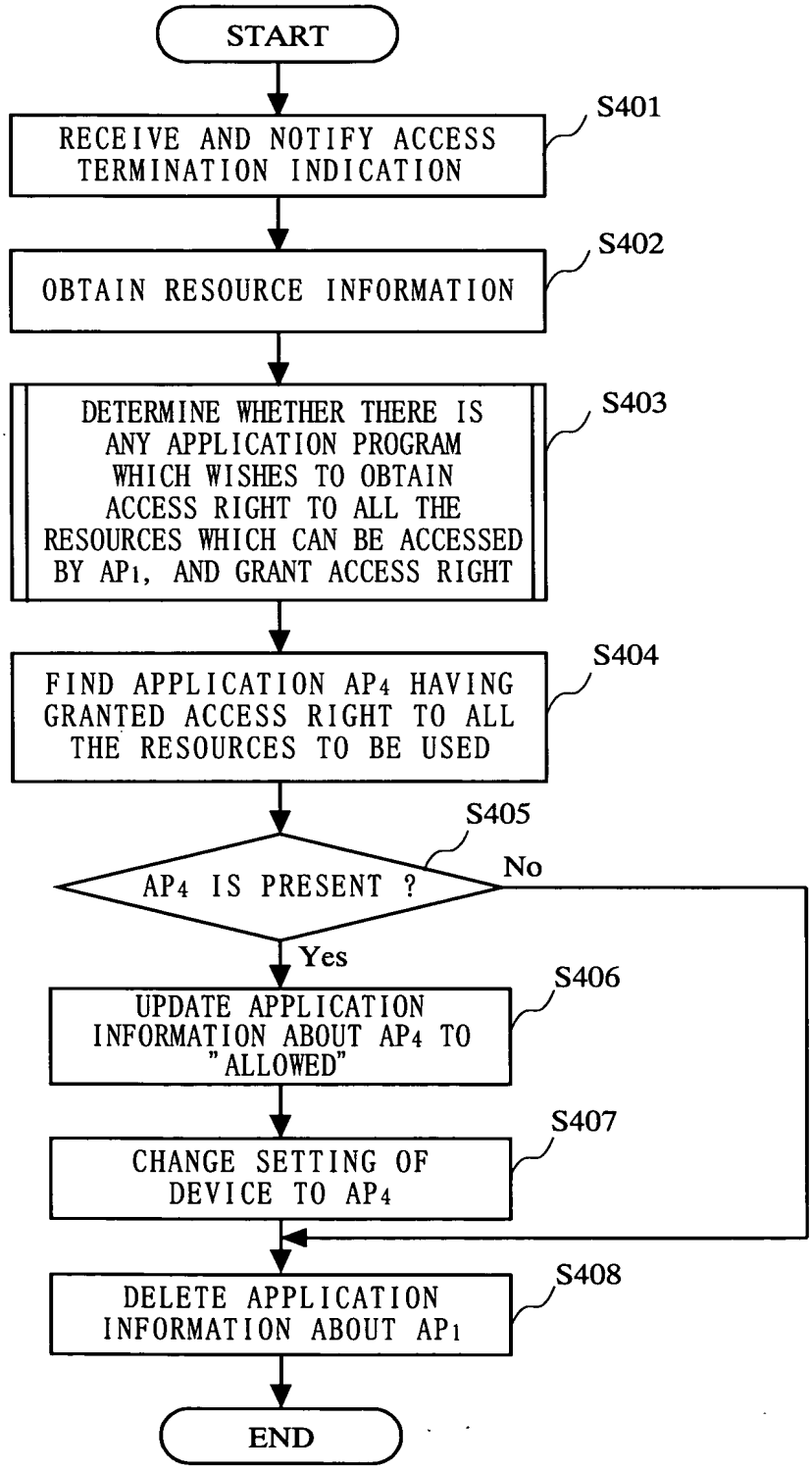

START
RECEIVE AND NOTIFY ACCESS TERMINATION INDICATION
S401
OBTAIN RESOURCE INFORMATION
S402
DETERMINE WHETHER THERE IS ANY APPLICATION PROGRAM WHICH WISHES TO OBTAIN ACCESS RIGHT TO ALL THE RESOURCES WHICH CAN BE ACCESSED BY AP1, AND GRANT ACCESS RIGHT
S403
FIND APPLICATION AP4 HAVING GRANTED ACCESS RIGHT TO ALL THE RESOURCES TO BE USED
S404
AP4 IS PRESENT ?
S405
No
Yes
UPDATE APPLICATION INFORMATION ABOUT AP4 TO "ALLOWED"
S406
CHANGE SETTING OF DEVICE TO AP4
S407
DELETE APPLICATION INFORMATION ABOUT AP1
S408
END

FIG. 13

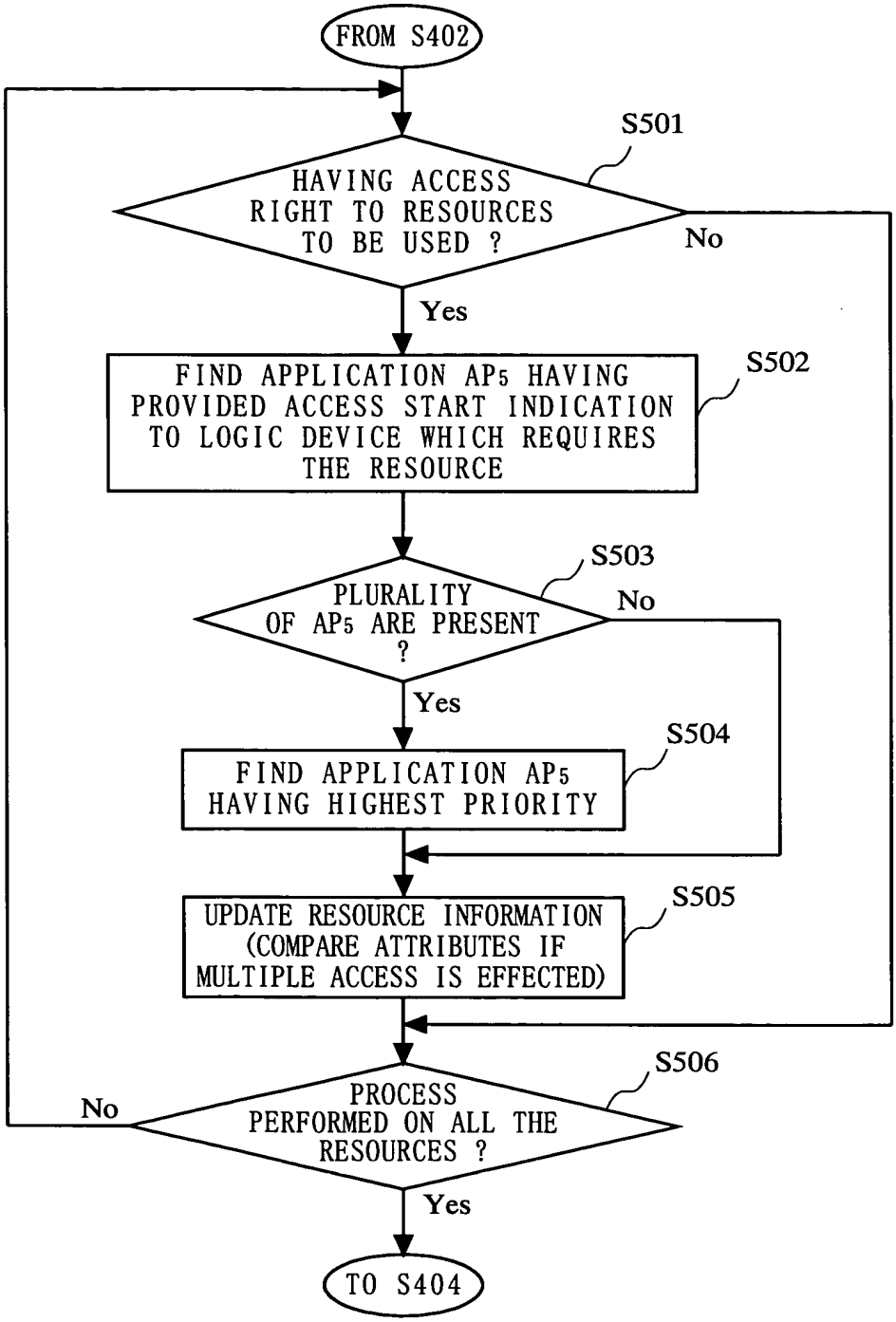
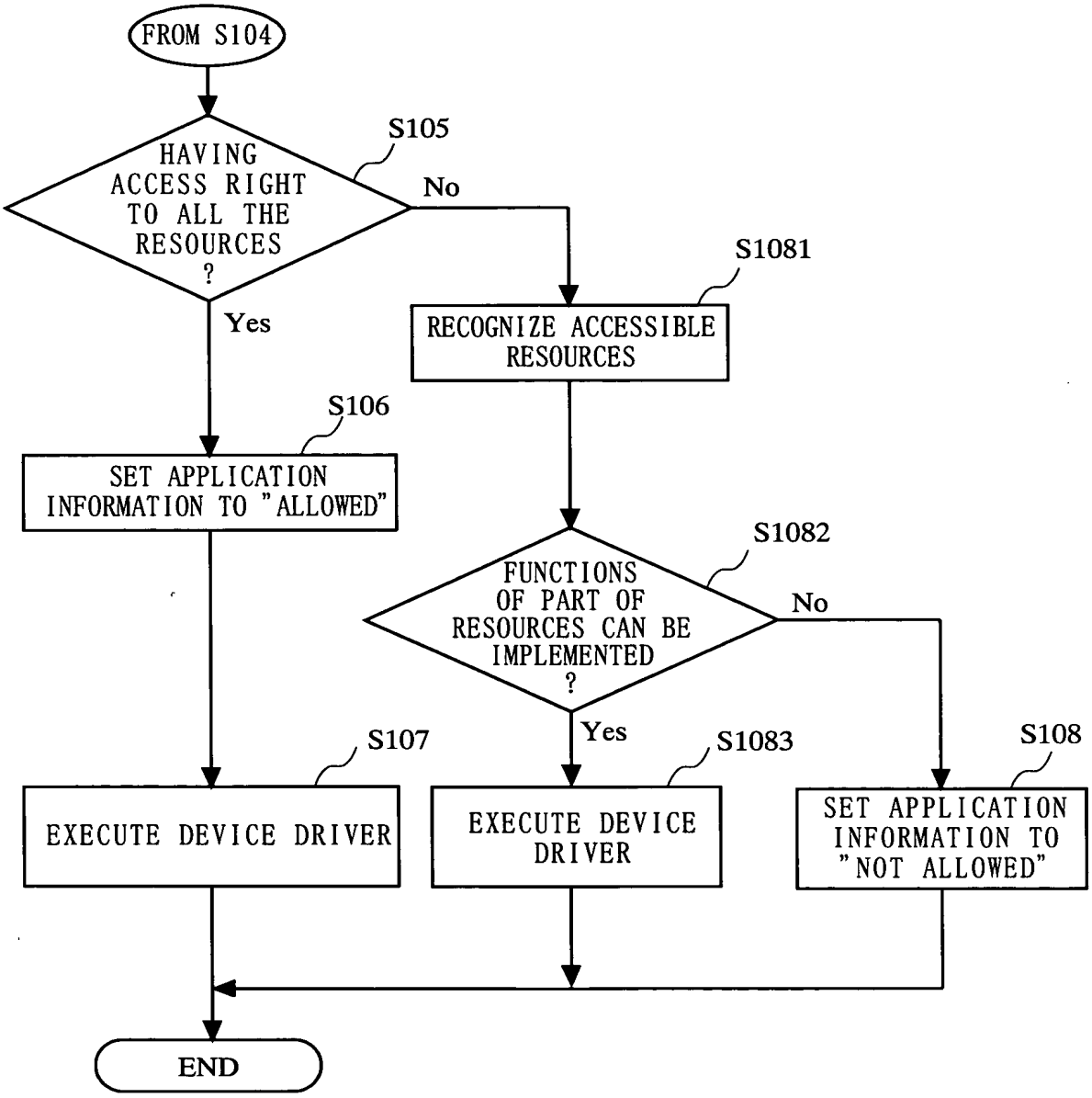

FROM S402
S501
HAVING ACCESS RIGHT TO RESOURCES TO BE USED ?
No
Yes
S502
FIND APPLICATION AP5 HAVING PROVIDED ACCESS START INDICATION TO LOGIC DEVICE WHICH REQUIRES THE RESOURCE
S503
PLURALITY OF AP5 ARE PRESENT ?
No
Yes
S504
FIND APPLICATION AP5 HAVING HIGHEST PRIORITY
S505
UPDATE RESOURCE INFORMATION (COMPARE ATTRIBUTES IF MULTIPLE ACCESS IS EFFECTED)
S506
PROCESS PERFORMED ON ALL THE RESOURCES ?
No
Yes
TO S404

FIG. 14


FROM S104
S105
HAVING ACCESS RIGHT TO ALL THE RESOURCES ?
No
Yes
S1081
RECOGNIZE ACCESSIBLE RESOURCES
S106
SET APPLICATION INFORMATION TO "ALLOWED"
S1082
FUNCTIONS OF PART OF RESOURCES CAN BE IMPLEMENTED ?
No
Yes
S107
S1083
S108
EXECUTE DEVICE DRIVER
EXECUTE DEVICE DRIVER
SET APPLICATION INFORMATION TO "NOT ALLOWED"
END